

Cisco Nexus 9400 Series Switches

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Cisco Nexus 9400 Series switches provide high density 400G solutions in a centralized modular chassis design.

Product overview

The Cisco Nexus 9400 Series centralized modular switches expand the Cisco Nexus 9000 Series portfolio with a new chassis that supports very high port density 400 Gigabit expansion modules.

As datacenters continue to evolve to support next-generation applications such as machine learning that drive massive growth intra-datacenter traffic bandwidth, datacenter operators require compact, high capacity, and highly efficient switches to upgrade datacenter fabrics. They need security, automation, visibility, analytics, and assurance. Equipped to support this next-generation cloud architecture, the Cisco Nexus 9400 series switches are based on Cisco Cloud Scale technology.

The Cisco Nexus 9400 series centralized modular architecture can scale up to 25.6 Tbps with a combination of field replaceable switch card, expansion modules, power supplies, and fans.

The Cisco Nexus 9400 series switch has a new design with height of 4 RU and depth of 24 inches including eight expansion slots to support 64 ports of 400G or 128 ports of 200 G.

Furthermore, the chassis architecture supports a supervisor, and up to 8 expansion modules, fan tray redundancy with 5 fan trays, and power supply redundancy.

Cisco provides two modes of operation for Cisco Nexus 9000 Series Switches. Organizations can deploy Cisco Application Centric Infrastructure (Cisco ACI) or Cisco NX-OS mode.

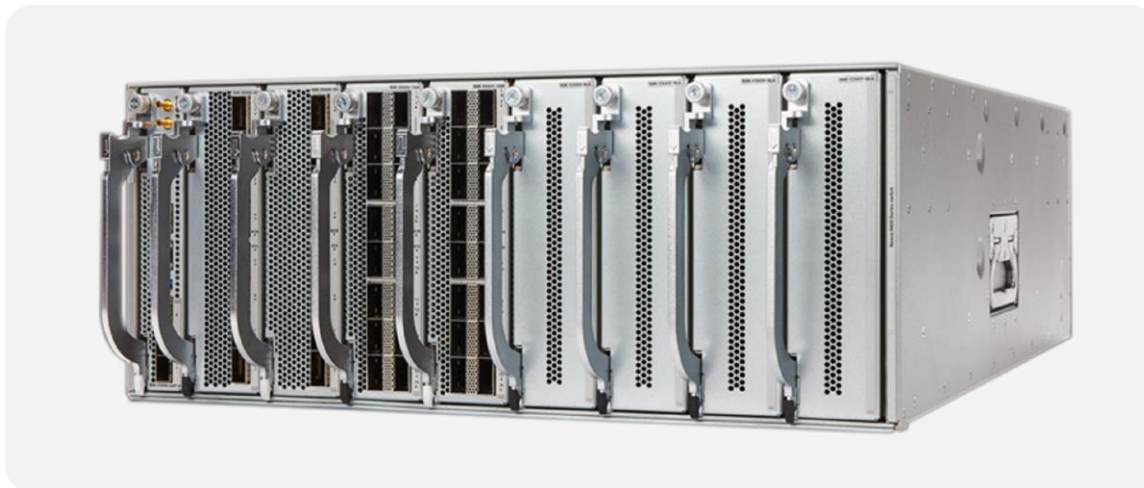


Figure 1.
Cisco Nexus 9400 Series Switch front-side

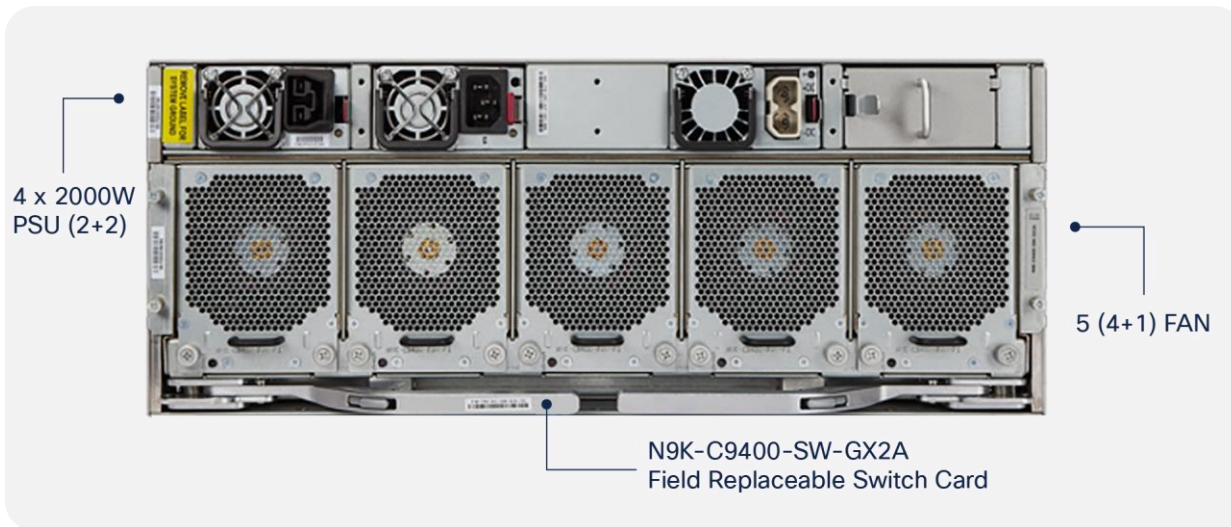


Figure 2.
Cisco Nexus 9400 Series Switch rear-side

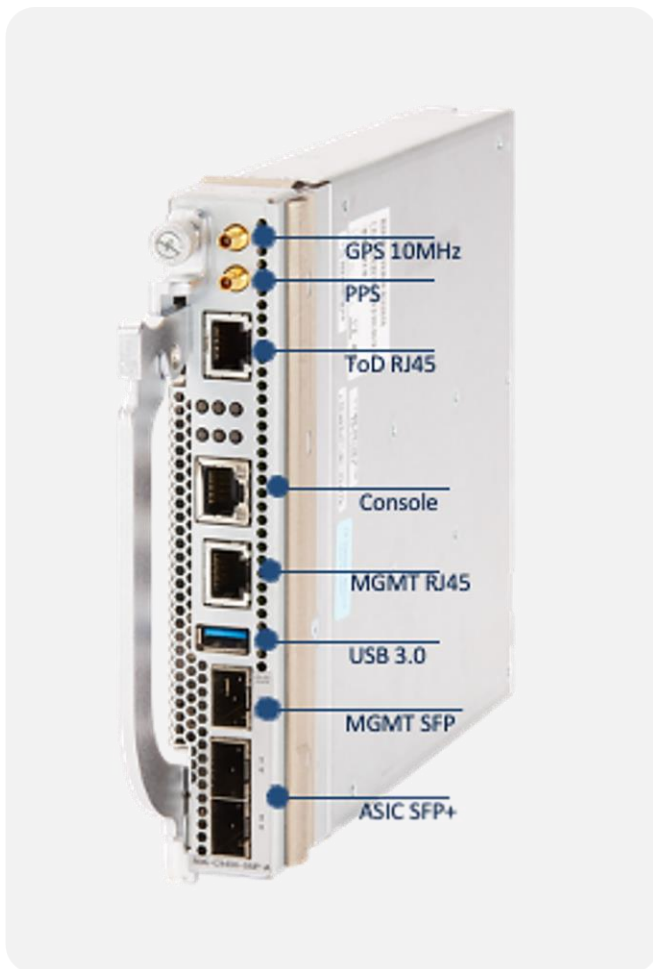


Figure 3.
Cisco Nexus 9400 Series supervisor front-side

Features and benefits

The Cisco Nexus 9400-GX2 series switches provide the following features and benefits:

Table 1. Features and benefits

Features	Description and benefits
Architectural flexibility	<ul style="list-style-type: none"> • Industry-leading Cisco Software-Defined Networking (SDN) solution with Cisco ACI support. Cisco ACI is a holistic, intent-driven architecture with centralized automation and policy-based application profiles. It provides a robust transport network for dynamic workloads and is built on a network fabric that combines time-tested protocols with new innovations to create a highly flexible, scalable, and resilient architecture of low-latency, high-bandwidth links. This fabric delivers a network that can support the most demanding and flexible data center environments. • Purpose-built Cisco NX-OS Software operating system with comprehensive, proven innovations. A single binary image supports every switch in the Cisco Nexus 9000 Series, simplifying image management. The operating system is modular, with a dedicated process for each routing protocol: a design that isolates faults while increasing availability. • Support for standards based VXLAN EVPN fabrics, inclusive of hierarchical multisite support (Refer to VXLAN network with MP-BGP EVPN control plane for more information) • Three-tier BGP architectures, enabling horizontal, nonblocking IPv6 network fabrics at web scale • Segment Routing (SR and SRv6) allows the network to forward Multiprotocol Label Switching (MPLS) packets and engineer traffic without Resource Reservation Protocol (RSVP) Traffic Engineering (TE). It provides a control-plane alternative for increased network scalability and virtualization. • Comprehensive protocol support for Layer 3 (v4 and v6) unicast and multicast routing protocol suites, including BGP, Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Routing Information Protocol Version 2 (RIPv2), Protocol Independent Multicast Sparse Mode (PIM-SM), Source-Specific Multicast (SSM), and Multicast Source Discovery Protocol (MSDP)
Extensive programmability	<ul style="list-style-type: none"> • Day-0 automation through Power On Auto Provisioning (POAP), drastically reducing provision time • Industry-leading integrations for leading DevOps configuration management applications, such as Ansible, Chef, Puppet, and SALT. Extensive native YANG and industry-standard OpenConfig model support through RESTCONF/NETCONF • Pervasive APIs for all switch Command-Line Interface (CLI) functions (JSON-based RPC over HTTP/HTTPs)
High scalability, flexibility, and security	<ul style="list-style-type: none"> • Flexible forwarding tables support up to two million shared entries. • IEEE 802.1ae MAC Security (MACsec) and CloudSec[1] (VTEP to VTEP encryption) capability on all ports, allows traffic encryption at the physical layer and provides secure server, border leaf, and leaf-to-spine connectivity.
Intelligent buffer management	<ul style="list-style-type: none"> • The platform offers Cisco's innovative intelligent buffer management, which offers the capability to distinguish mice and elephant flows and apply different queue management schemes to them based on their network forwarding requirements in the event of link congestion. • Intelligent buffer management functions include: <ul style="list-style-type: none"> • Approximate Fair Dropping (AFD) with Elephant Trap (ETRAP). AFD distinguishes long-lived elephant flows from short-lived mice flows, by using ETRAP. AFD exempts mice flows from the dropping algorithm so that mice flows will get their fair share of bandwidth without being starved by bandwidth-hungry elephant flows. Also, AFD tracks elephant flows and subjects them to the AFD algorithm in the egress queue to grant them their fair share of bandwidth. • ETRAP measures the byte counts of incoming flows and compares this against the user-defined ETRAP threshold. After a flow crosses the threshold, it becomes an elephant flow. • Dynamic Packet Prioritization (DPP) provides the capability of separating mice flows and elephant flows into two different queues so that buffer space can be allocated to them independently. Mice flows—sensitive to congestion and latency—can take priority queue and avoid reordering that allows the elephant flows to take full link bandwidth.

Features	Description and benefits
Remote Direct Memory Access (RDMA) over converged Ethernet - RoCE support	<ul style="list-style-type: none"> • The platform offers lossless transport for Remote Direct Memory Access (RDMA) over converged Ethernet with support of Data Center Bridging (DCB) protocols: • Priority-based Flow Control (PFC) prevents drops in the network and pause-frame propagation per priority class. • Enhanced Transmission Selection (ETS) reserves bandwidth per priority class in network contention situations. • Data Center Bridging Exchange Protocol (DCBX) can discover and exchange priority and bandwidth information with endpoints. • The platform also supports Explicit Congestion Notification (ECN), which provides end-to-end notification per IP flow by marking packets that experienced congestion, without dropping traffic. The platform is capable of tracking ECN statistics, including the number of marked packets that have experienced congestion.
Hardware and software high availability	<ul style="list-style-type: none"> • Virtual Port-Channel (vPC) technology provides Layer 2 multipathing through the elimination of Spanning Tree Protocol (STP). It also enables fully utilized bisectional bandwidth and simplified Layer 2 logical topologies without the need to change the existing management and deployment models. • The 64-way Equal-Cost MultiPath (ECMP) routing enables the use of Layer 3 fat-tree designs. This feature helps organizations prevent network bottlenecks, increase resiliency, and add capacity with little network disruption. • Advanced reboot capabilities include hot and cold patching. • The switches use hot-swappable Power-Supply Units (PSUs) and fans with N+1 redundancy.
Cisco Nexus Dashboard and Nexus Cloud	<ul style="list-style-type: none"> • Deploy, manage, and operate cloud network, with unparalleled visibility to make hybrid cloud automation possible. Click here to learn more.

Product sustainability

Information about Cisco's environmental, social and governance (ESG) initiatives and performance is provided in Cisco's CSR and sustainability [reporting](#).

Table 2. Cisco Environmental Sustainability Information

Sustainability Topic		Reference
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries and packaging	WEEE Compliance
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
	Sustainability Inquiries	Contact: csr_inquiries@cisco.com
Power	Power supply	Table 6. Product specifications: power supplies, typical and maximum power specification
Material	Product packaging weight and materials	Contact: environment@cisco.com
	Weight	Table 3. Product specifications

Product specifications

Table 3. Cisco Nexus 9400 series switch chassis specifications

Model	Cisco Nexus 9408 chassis
Number of LEM slots	8
Number of supervisor slots	1
Dimensions (H x W x D)	6.97 x 17.30 x 23.62 in
Weight	121.25 lb (55 kg)

Table 4. Cisco Nexus 9400 series supervisor, linecard, switch card specifications

Model	Dimensions (H x W x D)	Weight
N9K-C9400-SUP-A	6.73 x 1.16 x 9.45 in	2.65 lb (1.2 kg)
N9K-X9400-8D	6.73 x 1.88 x 9.45 in	3.75 lb (1.7 kg)
N9K-X9400-16W	6.73 x 1.88 x 9.45 in	4.12 lb (1.87 kg)
N9K-C9400-SW-GX2A	4.88 x 17.27 x 15.39 in	35.49 lb (16.1 kg)
N9K-C9400-FAN-PI	3.97 x 3.09 x 5.27 in	1.67 lb (0.76 kg)

Table 5. Cisco Nexus 9400 series system specifications

Description	Specification
Processor	Intel Broadwell-DE-NS D-1633N, 6C @ 2.5GHz
DRAM	32GB DDR4
SSD	128GB
Console Port	1x RJ45 1x RS232
Management Port	1x 10/100/1000BASE-T 1x 1/10-Gbps SFP
USB Port	1x USB 3.0

Table 6. Cisco Nexus 9400 series power specifications

Model	Typical Power	Maximum Power
N9K-C9400-SUP-A	50 W	75 W
N9K-X9400-8D	120 W	140 W
N9K-X9400-16W	100 W	145 W
N9K-C9400-SW-GX2A	760 W	990 W

Model	Cisco Nexus 9400 AC Power Supply	Cisco Nexus 9400 DC Power Supply	Cisco Nexus 9400 HV Power Supply
Output Power	2,000 W	2,000 W	2,000 W
Input Voltage	90-140V AC 180-264V AC	-40 to -72V DC	90-140V AC 180-305V AC 192-400V DC
Input Frequency	50/60 Hz	-	50/60 Hz
Connector	IEC60320 C14	Amphenol C10-638976-000	Anderson Power Product: Saf-D-Grid
Efficiency	80PLUS efficiency rating		80PLUS efficiency rating

Ordering information

To order, please visit the [Cisco Ordering Home Page](#) or [Cisco Nexus 9400 Series Ordering Guide](#) if available.

For additional product numbers, including the Cisco Nexus 9400 Series bundle offerings, please check the [Cisco Nexus 9400 Series information page](#) or contact your local Cisco account representative. To download software, visit the [Cisco Software Central](#).

Table 7. Cisco Nexus 9400 ordering information

Part #	Product Description
N9K-C9408	Nexus 9400 Chassis with 8 linecard slots
N9K-C9400-SUP-A	Nexus 9400 CPU card with PTP, SyncE
N9K-X9400-8D	Nexus 9400 8p 400G QSFP-DD LEM
N9K-X9400-16W	Nexus 9400 16p 200G LEM
N9K-C9400-SW-GX2A	Nexus 9400 Switch Card
N9K-C9400-ACK	Nexus 9408 Accessory Kit

Part #	Product Description
N9K-C9400-RMK	Nexus 9408 Rack Mount Kit
N9K-C9400-FAN-PI	Nexus 9408 fan (port-side intake)
NXA-PAC-2KW-PI	Nexus 9408 2KW AC Power Supply
NXA-PDC-2KW-PI	Nexus 9408 2KW DC Power Supply
NXA-PHV-2KW-PI	Nexus 9408 2KW High-voltage AC/DC Power Supply

Warranty information

The Cisco Nexus 9400 platform has a 1-year limited hardware warranty. The warranty includes hardware replacement with a 10-day turnaround from receipt of a Return Materials Authorization (RMA).

Service and support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco Nexus 9400 switch in your data center. The innovative Cisco Services offerings are delivered through a unique combination of people, processes, tools, and partners and are focused on helping you increase operation efficiency and improve your data center network. Cisco Advanced Services uses an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value. Cisco SMARTnet Service helps you resolve mission-critical problems with direct access at any time to Cisco network experts and award-winning resources.

Cisco Capital

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For more information

For more information about the Cisco Nexus 9000 Series, please visit <https://www.cisco.com/go/nexus9000>

Document history

New or revised topic	Described in	Date

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

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